

REMARKS

Upon entry of this amendment, claims 63-80 are all the claims pending in the application. Claims 26-62 are canceled by this amendment. Claims 63-80 have been added as new claims. No new matter has been added.

Applicants note that several editorial amendments have been made to the specification for grammatical and general readability purposes. No new matter has been added.

I. Claim Rejections

Claims 30, 31, 36-55 and 59-62 were rejected under 35 U.S.C. §112, first paragraph as failing to comply with the enablement requirement; claim 35 was rejected under 35 U.S.C. 112, second paragraph as being indefinite; claims 26-29, 32, 34, 35, 56 and 57 were rejected under 35 U.S.C. § 102(a) as being anticipated by Yamane et al. (U.S. 2002/0115380); and claims 27, 33 and 58 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamane et al.

To facilitate the Examiner's reconsideration of the application, and to more clearly define the novel features of the present invention, claims 26-62 have been canceled and have been replaced with new claims 63-80. Applicants submit that each of the new claims has been drafted to ensure compliance with the requirements of 35 U.S.C. §112, first and second paragraphs. Further, Applicants submit that each of the new claims has been drafted so as to further distinguish the present invention from the references applied by the Examiner, and therefore, that the above-mentioned prior art rejections are inapplicable to the new claims for at least the following reasons.

Claim 63 recites the features of a pulsed light source energizing at a sampling time; and light-receiving elements for detecting the light rays divided by a spectroscopy unit, wherein each of the light-receiving elements accumulates the detected light rays as electrical information during a sampling period and releases the electrical information. Applicants respectfully submit that the Yamane et al. (U.S. 2002/0115380) reference does not disclose or suggest such a combination of features.

Regarding the Yamane reference, Applicants note that this reference discloses a polishing end point detecting device which includes an illumination/light receiving optical system 28, a

branched light guide 30, a light source 32, a spectroscope 34, and a computer 36 (see paragraph [0045] and Fig. 1). As explained in Yamane, the light source 32 comprises a lamp which applies white light, wherein the white light is conducted to the illumination/light receiving optical system 28 by the light guide 30A, and is then converged on the bottom face of the wafer W (see paragraph [0048]). The light reflected from the bottom face of the wafer W is then led into the branched light guide 30B, and conducted to the spectroscope 34 (see paragraph [0048] and Fig. 1).

In the spectroscope 34, the reflected light is split into lights for corresponding wavelengths, the split light being converted into electrical signals corresponding to the intensities of the corresponding wavelengths, wherein the converted electric signals corresponding to the intensities of the corresponding wavelengths are output to the computer 34 (see paragraph [0049]). As explained in Yamane, the computer 36 then determines a polishing end point in accordance with the light intensity signals for the corresponding wavelengths of the reflected light which have been output from the spectroscope 34 (see paragraph [0050]).

As noted above, new claim 63 recites the features of a pulsed light source energizing at a sampling time; and light-receiving elements for detecting the light rays divided by a spectroscope unit, wherein each of the light-receiving elements accumulates the detected light rays as electrical information during a sampling period and releases the electrical information. Applicants respectfully submit that Yamane does not disclose or suggest such features.

In particular, based on the above-noted description of Yamane, Applicants note that while Yamane discloses white light which is output from the light source 32 to the wafer W, the white light being reflected from the wafer and converted into light intensity signals for corresponding wavelengths, that Yamane does not disclose or in any way suggest that a pulsed light source is utilized for energizing at a particular sampling time or that light-receiving elements are provided which accumulate detected light rays as electrical information during a sampling period and release the electrical information.

In this regard, as explained in an illustrative embodiment of the present invention, if a sampling period is constant, then radial positions of measuring points on the surface of an object per revolution of the polishing table become constant (see the specification at page 25, lines 18-

20). As explained in the specification, such a measuring process is more advantageous in recognizing the situation of a remaining film on a semiconductor wafer W than the case where characteristic values at indefinite positions are measured (see the specification at page 25, lines 21-24).

In view of the foregoing, Applicants respectfully submit that Yamane does not disclose, suggest or otherwise render obvious the features of a pulsed light source energizing at a sampling time; and light-receiving elements for detecting the light rays divided by a spectroscopy unit, wherein each of the light-receiving elements accumulates the detected light rays as electrical information during a sampling period and releases the electrical information, as recited in new claim 63.

Accordingly, Applicants submit that claim 63 is patentable over Yamane, an indication of which is kindly requested. Claims 64-66 depend from claim 63 and are therefore considered patentable at least by virtue of their dependency.

Regarding claim 67, Applicants note that this claim recites the features of light-receiving elements for detecting the light rays divided by a spectroscopy unit, wherein each of the light-receiving elements accumulates the detected light rays as electrical information during a sampling period and releases the electrical information; and a control unit for controlling the light-receiving elements so that a light transmission unit faces the center of the workpiece at a sampling time of the light-receiving elements, wherein the sampling time represents a half of a time after a first one of the light-receiving elements starts storing electrical information until a last one of the light-receiving elements releases electrical information.

As noted above, Yamane discloses the ability to collect light that is reflected from the surface of a wafer W, wherein the reflected light is converted into light intensity signals for corresponding wavelengths. Applicants respectfully submit, however, that Yamane does not disclose or in any way suggest that the light receiving elements accumulate detected light rays as electrical information during a sampling period and release the electrical information, or that a control unit controls the light-receiving elements so that a light transmission unit faces the center of the workpiece at a sampling time of the light-receiving elements, wherein the sampling time represents a half of a time after a first one of the light-receiving elements starts storing electrical

information until a last one of the light-receiving elements releases electrical information.

In view of the foregoing, Applicants respectfully submit that claim 67 is patentable over Yamane, an indication of which is kindly requested. Claims 68-71 depend from claim 67 and are therefore considered patentable at least by virtue of their dependency.

Regarding claim 72, Applicants note that this claim recites the feature of energizing a pulsed light source at a sampling time, and detecting the light rays divided by a spectroscopy unit by light-receiving elements, wherein each of the light-receiving elements accumulates the detected light rays as electrical information during a sampling period and releases the electrical information.

For at least similar reasons as discussed above with respect to claim 63, Applicants submit that Yamane does not disclose, suggest or otherwise render obvious such features. Accordingly, Applicants submit that claim 72 is patentable over Yamane, an indication of which is kindly requested. Claims 73-75 depend from claim 72 and are therefore considered patentable at least by virtue of their dependency.

Regarding claim 76, Applicants note that this claim recites the features of detecting the light rays divided by a spectroscopy unit by light-receiving elements, wherein each of the light-receiving elements accumulates the detected light rays as electrical information during a sampling period and releases the electrical information; and controlling the light-receiving elements by a control unit so that a light transmission unit faces the center of the workpiece at a sampling time of the light-receiving elements, wherein the sampling time represents a half of a time after a first one of the light-receiving elements starts storing electrical information until a last one of the light-receiving elements releases electrical information.

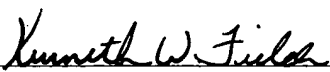
For at least similar reasons as discussed above with respect to claim 67, Applicants respectfully submit that Yamane does not disclose, suggest or otherwise render obvious such features. Accordingly, Applicants submit that claim 76 is patentable over Yamane, an indication of which is kindly requested. Claims 77-80 depend from claim 76 and are therefore considered patentable at least by virtue of their dependency.

II. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may best be resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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